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THE FED HOG BASIS IN OHIO,
1972-1982

By

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The trading of fed hog futures presents Ohio hog producers with the opportunity to hedge their production. When a producer hedges his production, he sells a futures contract, usually the one closest to but following the expected date on which the hogs will be sold. Normally, to complete the hedge, the futures contract is bought back when the hogs are sold. The price resulting from this production hedge equals the futures price at which the hedge was placed, minus the futures price at which the hedge was lifted, plus the cash price at which the hogs were sold. Subtracting the cost of production from this price yields the profit or loss from raising the hogs.

A slightly different view of the price resulting from the production hedge can be obtained when it is recognized that the futures price at which the hedge was lifted minus the cash price equals the basis. Thus, the price resulting from the production hedge equals the futures price at which the hedge was placed minus the basis. Consequently, once the production hedge is placed, the only unknown in determining the price is the basis.

The basis is not constant but varies from year to year for the same day. Therefore, the price resulting from the production hedge is never known until the hedge is closed out. However, at the time the decision to hedge is being made, a producer needs some idea of what the basis will be when the hogs are to be sold. Otherwise, an indication of the price and therefore profit which results from the production hedge cannot be formed. Without this indication, the decision to hedge cannot be made on sound economic evidence.

Generally, the best indicator of what the basis will be on the date the hogs are expected to be sold is the average of past bases for that date. A recent study at Ohio State University has compiled an average fed hog basis for Ohio over the 1972-1982 period. This study used for the cash price the high quote on the price range reported by the Ohio Department of Agriculture for U.S. number one and two barrows and gilts, 200-240 pounds, at country points. This price is an average for 11 order buyers and packers scattered throughout Ohio and thus is a direct market price. Also collected was the opening nearby futures price for the same day the cash price was collected. The opening futures quote was used because the cash prices are collected by approximately 11:00 a.m. Eastern Standard Time. This time is closer to the 10:10 a.m. EST opening of trading on the Chicago Mercantile Exchange than the 2:00 p.m. close of trading (Chicago Mercantile Exchange, 1980). To summarize, the basis was calculated as the nearby futures price minus the corresponding cash price. This basis is the one needed to estimate an expected price resulting from the production hedge described above.

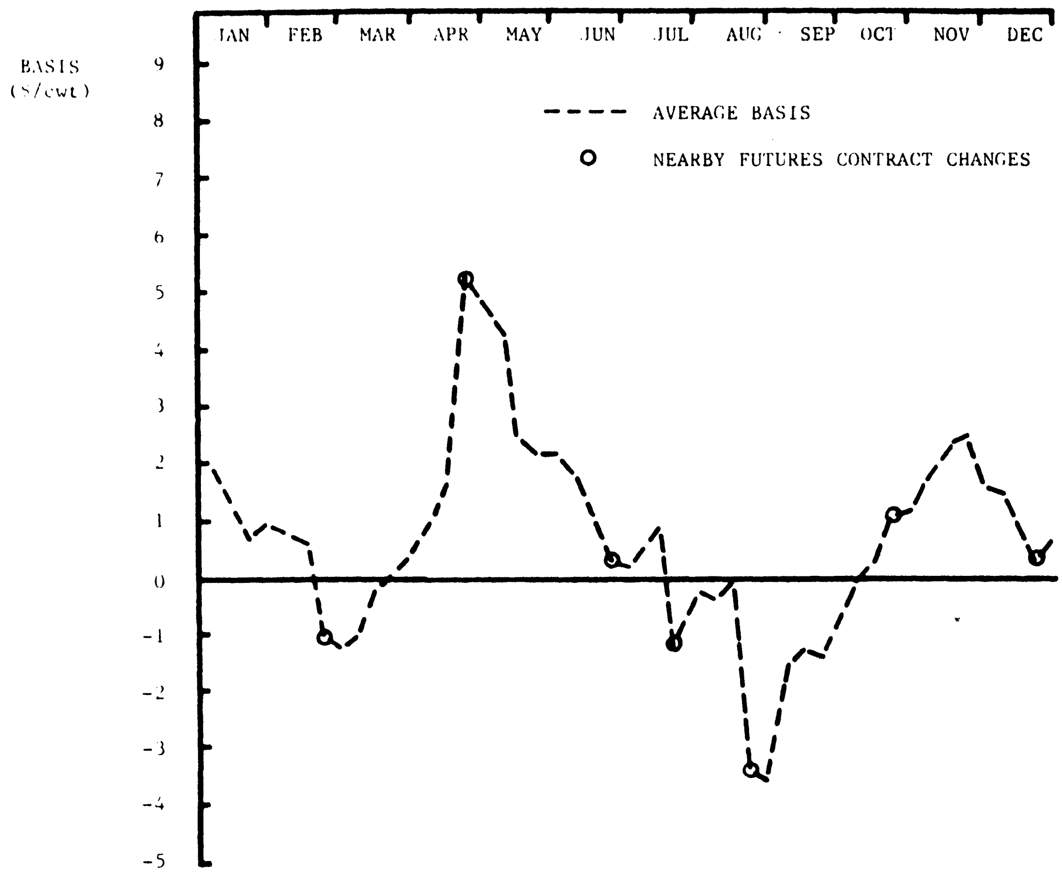
Cash prices could be readily obtained only for Friday. Given the small number of observations, the Friday dates were grouped into four weekly time periods to increase the reliability of the basis estimates. These weekly time periods were days 1-7, 8-14, 15-21, and 22-31 of a month. An average was used if two Fridays fell in the 22-31 period. Thus, a cash basis was computed for 48 weekly time periods. Lastly, since futures contracts are traded for February, April, June, July, August, October, and December delivery, seven contract changes were necessary to compile a continuous nearby basis. These changes were made during the third weekly period of the delivery month for each futures contract. The change was made during this weekly period to avoid possible price distortions caused by delivery considerations.

Figure 1 presents the average of the 11 basis observations for each of the 48 weekly time periods. (The numerical values for the averages are contained in Appendix Table 1 and the numerical values for each of the 11 basis observation for each of the 48 weekly periods are contained in Appendix Tables 2-7.) From Figure 1, a seasonal basis pattern clearly existed during the 1972-1982 observation period. The cash exceeded the futures price on average during the summer months and from late February to late March. During the other months, the futures exceeded the cash price on average. The cash exceeded the futures by the widest margin during August and September while the futures exceeded the cash by the widest margin during April and May. A comparable seasonal pattern was reported by Heinhold for Peoria, Illinois over the 1977-81 period. Also, note that the basis seasonal is similar to the seasonal for fed hog cash prices.

Using the average bases presented in Figure 1 and Appendix Table 1, an Ohio hog producer can obtain an indication of the price likely to result from a production hedge. To illustrate, consider a producer who is deciding whether or not to hedge hogs which he expects to sell during the second week of May. The June futures is the contract closest to but following the expected sell date. Assume that this futures is selling for $50 a hundredweight. From Appendix Table 1, the average basis during the second week of May is $2.52. Thus, the price likely to result from the production hedge is $50 minus $2.52, or $47.48.

Whether this producer hedges or not depends on his cost of production, his view on potential changes in the price of the June futures, and his financial position. However, a decision cannot be made until a reasonable estimate

FIGURE 1: Futures-Cash Basis for Ohio Direct Hog Market, Average, 1972-1982



[a]Cash prices used were the high quote on the price range for U.S. number one and twos, 200-240 pounds, at country points. Futures prices used were the opening quote. Basis equals futures minus cash.

[b]Prices were collected only for Friday or the nearest available date. To allow comparisons across years, the Friday dates were grouped into four periods: days 1-7, days 8-14, days 15-21, and days 22-31 of a month. If two days fell in the 22-31 period, the average was used.

Sources: Chicago Mercantile Exchange Yearbook, 1971/72-1981.

Ohio Federal-State Newsletter, 1972-1982.

The Wall Street Journal, January 1982-December 1982.

is made of the price likely to result from the hedge. This need is met by using the average of previous bases for the expected sell date.

In conclusion, two points of caution should be injected. First, the average basis only provides an indication of what the basis will be when the hedge is lifted. The actual basis at the time the hedge is lifted will not usually equal the average. The resulting divergence implies that the price resulting from the production hedge may be more favorable or less favorable than that expected from the average basis. This variation should be remembered when evaluating a production hedge. Secondly, the basis presented above may not be the basis any individual producer in Ohio faces since it was constructed from an average cash price for the state. The basis will generally differ between localities in the state. Consequently, each producer should construct his own cash basis based on his experiences. In the meantime, the average basis values presented in Figure 1 and Appendix Table 1 can serve as a reasonable guide in a production hedge decision.

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Heinold Commodities Inc., Farm Market Letter, No. 12 (1981).

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APPENDIX TABLE 1: Nearby Futures - Cash Average Basis for Direct Hog Market, Ohio, 1972-1982[a]

Month	First Period[b]	Second Period[b]	Third Period[b]	Fourth Period[b]
		--- ($/cwt) ---		
January	1.87	1.19	.72	.92
February	.80	.59	-1.07	-1.30
March	-1.04	-.21	.12	.40
April	.89	1.70	5.12	4.88
May	4.33	2.52	2.22	2.20
June	1.87	1.27	.35	.21
July	.52	.90	-1.16	-.28
August	-.37	-.06	-3.44	-3.65
September	-1.60	-1.31	-1.39	-.70
October	.00	.23	1.05	1.11
November	1.80	2.32	2.50	1.61
December	1.52	1.07	.34	.62

[a]Cash prices used were the high quote on the price range for U.S. number one and twos, 200-240 pounds, at country points. Prices were collected only for Friday or the nearest available date. Futures prices used were the opening quotes for the nearby futures. Hog futures are traded for delivery in February, April, June, July, August, October and December. Basis equals futures minus cash.

[b]To allow comparisons across years, the Friday dates were grouped into four periods: days 1-7, 8-14, 15-21, and 22-31 of a month. If two days fell in the 22-31 period, the average was used as the observation for that weekly period. The nearby futures was changed during the third weekly period of each delivery month.

Sources: Chicago Mercantile Exchange Yearbook, 1971/72-1981

Ohio Federal-State Newsletter, 1972-1982

Wall Street Journal, January 1982-December 1982

APPENDIX TABLE 2: Nearby Futures - Cash Basis for Direct Hog Market, Ohio, January and February, 1972-1982[a]

Year	January First Period[b]	January Second Period[b]	January Third Period[b]	January Fourth Period[b]	February First Period[b]	February Second Period[b]	February Third Period[b]	February Fourth Period[b]
				--- ($/cwt) ---				
1972	2.25	2.50	.75	.60	1.57	.25	-.90	-1.33
1973	1.60	.20	.60	.55	.55	.12	-3.90	-3.15
1974	5.70	4.45	4.65	3.85	2.80	-.25	1.75	.35
1975	2.00	1.25	-1.75	.85	.40	1.90	.55	-.50
1976	-.50	-1.65	-2.10	-2.78	-1.75	-.15	-4.65	-3.85
1977	-2.35	-3.08	-2.30	-2.15	-.75	.45	-3.85	-4.70
1978	-.45	-.50	-1.30	.00	-.65	1.05	-4.30	-4.25
1979	-.40	.25	.35	.55	.95	.95	-1.40	-.90
1980	4.65	3.30	2.75	3.10	1.50	.72	.45	.75
1981	5.00	4.00	4.70	4.85	2.22	1.65	6.85	4.00
1982	3.05	2.35	1.60	.70	.65	-.15	-2.40	-.75

[a]Cash prices used were the high quote on the price range for U.S. number one and twos, 200-240 pounds, at country points. Prices were collected only for Friday or the nearest available date. Futures prices used were the opening quotes for the nearby futures. Hog futures are traded for delivery in February, April, June, July, August, October, and December. Basis equals futures minus cash.

[b]To allow comparisons across years, the Friday dates were grouped into four periods: days 1-7, 8-14, 15-21, and 22-31 of a month. If two days fell in the 22-31 period, the average was used as the observation for that weekly period. The nearby futures was changed during the third weekly period of each delivery month.

Sources: Chicago Mercantile Exchange Yearbook, 1971/72-1981

Ohio Federal-State Newsletter, 1972-1982

Wall Street Journal, January 1982-December 1982

APPENDIX TABLE 3: Nearby Futures - Cash Basis for Direct Hog Market, Ohio, March and April, 1972-1982[a]

	March				April			
Year	First Period[b]	Second Period[b]	Third Period[b]	Fourth Period[b]	First Period[b]	Second Period[b]	Third Period[b]	Fourth Period[b]
				- - - ($/cwt) - - -				
1972	-.75	.10	.60	1.25	1.60	1.52	3.95	3.12
1973	-2.75	-1.75	-.80	-.04	-1.00	-.40	-.25	1.60
1974	.00	.90	.75	-.55	.90	2.00	5.95	3.70
1975	-1.35	-.20	1.50	1.85	.97	1.50	5.75	5.85
1976	-3.95	-2.20	-1.75	-1.40	-.15	1.35	4.00	3.22
1977	-4.70	-3.15	-.80	-1.10	.05	1.65	5.40	6.40
1978	-3.25	-1.50	-1.00	.10	1.60	2.40	5.85	4.75
1979	1.12	1.80	.10	1.10	1.45	3.40	5.65	5.85
1980	1.35	.75	1.00	.85	.25	1.50	5.45	5.75
1981	3.15	2.40	.95	1.60	2.40	3.25	9.80	9.10
1982	-.35	.50	.75	.75	1.75	.50	4.75	4.30

[a]Cash prices used were the high quote on the price range for U.S. number one and twos, 200-240 pounds, at country points. Prices were collected only for Friday or the nearest available date. Futures prices used were the opening quotes for the nearby futures. Hog futures are traded for delivery in February, April, June, July, August, October, and December. Basis equals futures minus cash.

[b]To allow comparisons across years, the Friday dates were grouped into four periods: days 1-7, 8-14, 15-21, and 22-31 of a month. If two days fell in the 22-31 period, the average was used as the observation for that weekly period. The nearby futures was changed during the third weekly period of each delivery month.

Sources: Chicago Mercantile Exchange Yearbook, 1971/72-1981

Ohio Federal-State Newsletter, 1972-1982

Wall Street Journal, January 1982-December 1982

APPENDIX TABLE 4: Nearby Futures - Cash Basis for Direct Hog Market, Ohio, May and June, 1972-1982[a]

Year	May: First Period[b]	May: Second Period[b]	May: Third Period[b]	May: Fourth Period[b]	June: First Period[b]	June: Second Period[b]	June: Third Period[b]	June: Fourth Period[b]
	- - - ($/cwt) - - -							
1972	2.40	1.85	1.10	.85	1.12	1.35	1.50	.83
1973	2.25	2.27	.35	1.25	2.42	1.72	2.10	2.17
1974	3.60	2.50	2.40	.95	.15	-.55	-3.05	-.18
1975	3.50	-1.78	1.25	1.63	1.65	1.20	-1.15	-1.05
1976	1.85	.65	-.05	.72	1.05	.35	1.00	-.35
1977	6.90	2.15	2.60	1.60	2.70	1.70	.95	2.57
1978	4.60	5.10	5.02	4.70	2.45	3.75	1.90	.25
1979	5.50	1.85	.40	1.50	1.75	.90	-.03	-2.65
1980	4.25	3.75	3.45	2.12	2.25	-.35	-1.30	-1.40
1981	8.70	7.15	4.95	5.88	2.70	1.75	4.25	3.62
1982	4.12	2.20	3.00	3.00	2.35	2.20	-2.30	-1.45

[a]Cash prices used were the high quote on the price range for U.S. number one and twos, 200-240 pounds, at country points. Prices were collected only for Friday or the nearest available date. Futures prices used were the opening quotes for the nearby futures. Hog futures are traded for delivery in February, April, June, July, August, October, and December. Basis equals futures minus cash.

[b]To allow comparisons across years, the Friday dates were grouped into four periods: days 1-7, 8-14, 15-21, and 22-31 of a month. If two days fell in the 22-31 period, the average was used as the observation for that weekly period. The nearby futures was changed during the third weekly period of each delivery month.

Sources: Chicago Mercantile Exchange Yearbook, 1971/72-1981

Ohio Federal-State Newsletter, 1972-1982

Wall Street Journal, January 1982-December 1982

APPENDIX TABLE 5: Nearby Futures - Cash Basis for Direct Hog Market, Ohio, July and August, 1972-1982[a]

Year	July: First Period[b]	July: Second Period[b]	July: Third Period[b]	July: Fourth Period[b]	August: First Period[b]	August: Second Period[b]	August: Third Period[b]	August: Fourth Period[b]
	--- ($/cwt) ---							
1972	.87	.80	-.95	.07	-.15	-.20	-3.40	-1.63
1973	2.30	2.70	1.25	-.45	.15	1.35	-1.70	-3.52
1974	-1.40	1.85	4.25	3.10	1.40	.50	-2.20	-1.95
1975	-1.80	-.25	-3.50	-2.10	-3.80	-1.10	-9.40	-4.82
1976	-.50	-.50	-3.20	-2.03	-.40	-.30	-4.75	-5.25
1977	2.05	-.20	-3.00	-1.87	-1.65	-1.45	-8.05	-7.15
1978	.35	.40	-2.90	.50	1.35	-.60	-4.35	-2.50
1979	.30	.75	-3.75	-1.55	-1.45	-1.65	-3.00	-4.12
1980	1.50	2.30	-1.90	.87	-.10	.60	.95	-5.00
1981	2.00	2.00	1.05	-.74	.40	.65	.50	.45
1982	.00	.10	-.10	1.15	.20	1.50	-2.40	-2.75

[a]Cash prices used were the high quote on the price range for U.S. number one and twos, 200-240 pounds, at country points. Prices were collected only for Friday or the nearest available date. Futures prices used were the opening quotes for the nearby futures. Hog futures are traded for delivery in February, April, June, July, August, October, and December. Basis equals futures minus cash.

[b]To allow comparisons across years, the Friday dates were grouped into four periods: days 1-7, 8-14, 15-21, and 22-31 of a month. If two days fell in the 22-31 period, the average was used as the observation for that weekly period. The nearby futures was changed during the third weekly period of each delivery month.

Sources: Chicago Mercantile Exchange Yearbook, 1971/72-1981

Ohio Federal-State Newsletter, 1972-1982

Wall Street Journal, January 1982-December 1982

APPENDIX TABLE 6: Nearby Futures - Cash Basis for Direct Hog Market, Ohio, September and October, 1972-1982[a]

Year	September				October			
	First Period[b]	Second Period[b]	Third Period[b]	Fourth Period[b]	First Period[b]	Second Period[b]	Third Period[b]	Fourth Period[b]
	--- ($/cwt) ---							
1972	-1.20	-.35	.25	.38	.15	.32	.00	.20
1973	2.27	-3.35	-5.75	-1.75	1.75	1.35	2.35	.90
1974	-1.55	-2.60	.32	.55	.75	-.60	4.55	2.85
1975	-3.20	-.75	-.55	-.35	.85	.00	.00	-1.98
1976	-4.05	-2.90	-3.00	-2.15	-1.00	1.00	-1.75	-1.08
1977	-5.33	-3.85	-2.40	-2.17	-1.35	-1.00	-3.35	-1.40
1978	-2.25	-1.30	-.75	-.05	.15	.35	-1.60	-.65
1979	-1.15	.40	-.78	-1.20	-1.35	-.50	1.50	3.10
1980	-.98	-1.00	-1.40	-1.80	-1.10	-.85	2.75	4.37
1981	.80	2.57	1.55	.80	1.25	1.25	4.10	4.63
1982	-.95	-1.25	-2.80	.02	-.10	1.20	3.05	1.25

[a]Cash prices used were the high quote on the price range for U.S. number one and twos, 200-240 pounds, at country points. Prices were collected only for Friday or the nearest available date. Futures prices used were the opening quotes for the nearby futures. Hog futures are traded for delivery in February, April, June, July, August, October, and December. Basis equals futures minus cash.

[b]To allow comparisons across years, the Friday dates were grouped into four periods: days 1-7, 8-14, 15-21, and 22-31 of a month. If two days fell in the 22-31 period, the average was used as the observation for that weekly period. The nearby futures was changed during the third weekly period of each delivery month.

Sources: Chicago Mercantile Exchange Yearbook, 1971/72-1981

Ohio Federal-State Newsletter, 1972-1982

Wall Street Journal, January 1982-December 1982

APPENDIX TABLE 7: Nearby Futures - Cash Basis for Direct Hog Market, Ohio, November and December, 1972-1982[a]

Year	November				December			
	First Period[b]	Second Period[b]	Third Period[b]	Fourth Period[b]	First Period[b]	Second Period[b]	Third Period[b]	Fourth Period[b]
	--- ($/cwt) ---							
1972	1.80	1.35	1.37	.30	.35	.27	-1.00	.95
1973	3.75	4.00	3.95	3.65	1.95	2.25	1.20	2.50
1974	1.02	1.85	.05	1.07	1.55	1.90	3.50	-.15
1975	2.20	4.35	3.65	1.90	2.25	2.45	-4.00	-3.50
1976	-1.65	-1.00	.35	-.38	-1.00	-2.15	-5.10	-1.59
1977	-.55	-.30	.87	.20	1.05	.45	-3.70	-2.28
1978	.50	2.95	3.80	4.25	4.15	1.67	1.45	-.93
1979	3.85	3.30	3.90	3.00	.07	.50	1.50	3.10
1980	3.25	2.75	4.35	2.40	3.25	2.30	7.75	5.07
1981	4.00	3.15	3.35	.20	.70	-.35	.65	2.30
1982	1.65	3.15	3.25	1.10	2.40	2.50	1.50	1.33

[a]Cash prices used were the high quote on the price range for U.S. number one and twos, 200-240 pounds, at country points. Prices were collected only for Friday or the nearest available date. Futures prices used were the opening quotes for the nearby futures. Hog futures are traded for delivery in February, April, June, July, August, October, and December. Basis equals futures minus cash.

[b]To allow comparisons across years, the Friday dates were grouped into four periods: days 1-7, 8-14, 15-21, and 22-31 of a month. If two days fell in the 22-31 period, the average was used as the observation for that weekly period. The nearby futures was changed during the third weekly period of each delivery month.

Sources: Chicago Mercantile Exchange Yearbook, 1971/72-1981

Ohio Federal-State Newsletter, 1972-1982

Wall Street Journal, January 1982-December 1982